Weekly work updates from February 2004 through December 2004 on the restoration of the 1895 lumber schooner *C. A. Thayer* 

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The ceiling planking has been progressing nicely. The gang has learned the ways of working with these long planks. The hull is now ceiled up to within two strakes of the shear clamp. We are faced with the problem of actually fabricating and installing the shear clamp.

The ceiling planking that has gone in is all 8 inch. The middle planks in each strake are solid timber, averaging about 14 inches wide and in lengths of up to 80 feet. The lower seven strakes of thick ceiling, which carry through the turn of the bilge, are scarf-jointed within the strake and are edge-fastened into the next lower strake with counter-set headed drifts. The upper strakes are solid timber through the mid-section but are butt-jointed rather than scarfed and are not edge-fastened. The forward planks of the ceiling strakes are in two 4-inch planks, in order to more easily make the more extreme bends in these areas of the hull. The same is true of the upper strakes aft above #11. The effect is imperceptible from the inside.

All of the thick ceiling is initially fasted with a single cone-headed drift at each frame, set well into the timber. After the ceiling is all in place and the inner surface is dubbed smooth and fair, three more drifts will be driven through clinch rings into each frame.

We have learned some additional detail on the layout of the sheer clamps forward in the course of disassembly. It was apparent from the looking at the upper surface of the clamps that they were solid unbroken timbers for most of the length of the vessel. The main timbers were 130 feet long and 14 inches high by 12 inches wide over most of their length. Aft, the clamps taper off to end at about frame #60. Forward, the clamp structure runs right up to the stem, but the forward 40 feet or so was made up of three layers of 4-inch material. We assumed that what we were looking at, from the top, was three 4-inch planks stacked up, in order to make the relatively extreme bend in the curve of the bow.

In fact, it turns out that forward of frame #3, the outboard eight inches of the clamp structure was actually the upper surface of thick ceiling strakes #15 and #14, running up under the inboard 4-inch fascia board of the continuous clamp. We had assumed that these strakes merely ran up to butt under the clamps. Thinking about it, however, it became clear that the layout as-found was in fact a much stronger way to do it. The ceiling planking runs up to become a part of the clamp forward, creating a strongly triangulated structure. This will effectively resist any droop in the shape of the bow. Once again we have occasion to salute the design sense of our forefathers.

We will replace the sheer clamps as-found, except that the main mid-body timber will be only 70 feet in length, scarfed to a new forward section of about 45 feet. We will then pick up the pattern of the old forward sections, running the ceiling up under the inboard 4-inch clamp plank.

Aft, we have less reason to applaud the structural stiffness of the design. The transom structure in fact appears quite weak. The whole of the transom framing - the timbers running fore-and-aft and providing a backing for the transom planking - butt into the after-most frame, #63. The after futtock, the floor, of frame #63, is heavily drifted into the rudder trunk. As-found, this timber had been pulled aft at the top by about 2-1/2 inches. The plane of the transom had fallen-off by several degrees.

The problem is in part the lack of any centerline timbers to support the after overhang. We had wondered, going into the project, whether the timber ports through the transom were original to the vessel. Perhaps they had been installed by the Army, when the vessel was refitted as a barge for the Aleutian Campaign in 1943. But as we got into the structure, it became apparent that they were in fact original. There would have been no point in building the stern this way except to accommodate the stern ports.

The stern structure shows no evidence of ever having more substantial centerline timbers. The timber port chutes are immediately alongside the rudder trunk on either side, allowing no room for anything like horn timbers. In fact the only longitudinal timbers in the lower portion of the stern overhang are the 8-inch thick ceiling planks running aft. Even the sheer clamps, which might be expected to run aft to help secure the stern, taper down to end at Frame #57, well forward of the overhang.

The major longitudinal rigidity for the stern overhang structure is derived from the poop deck clamp timbers, which run from the log-built break-of-poop bulkhead aft to tie into the quarter knees and athwartship transom beams. This structure is further strengthened by a run of upper ceiling planking, about 2-1/2 inches thick, fitted tightly between the main deck and the poop clamps. The overall effect is to create a box girder, above main deck level, with sufficient rigidity to hold the angle of the transom and the relatively short unsupported span of the stern overhang.

In the old hull, the integrity of this girder had been compromised to some extent by earlier rebuilding efforts. The heavy quarter knees had been removed, and the continuity of the clamp timbers destroyed, especially on the starboard side. The run of ceiling planking had been entirely removed on the starboard side. With any luck, the failure of the old structure to maintain rigidity in the transom angle can be avoided by reestablishing the original girder design.

The last notable bit of framing aft remaining to be replaced is the floor of the aftermost #63 frame. The contractor has chosen to leave the original in place to this point, in order to hold the shape of the bottom of the transom as the thick ceiling was run aft. The ceiling was run over this floor, but has not been drifted down to the after three or four frames. The old floor is being trued-up and leveled before being templated. Final installation can only be done after the new rudder trunk is in place, as the floor must be drifted into it. We are waiting on the next major timber delivery for materials for the trunk replacement and the renewal of the deteriorated upper portion of the stern post.

The last three original top timber futtocks, the #4 timbers of Frames 36, 37, and 38 on the port side, were condemned and replaced this week. These are the uppermost of the forward futtocks, which reach to the sheer line. We had been hoping to save these pieces. They looked good from the outside, and not bad from the top, but when we got the clamp off in this area, the insides were very dicey. So sayonara. A bitter-sweet decision. But, we recall, almost all of the floor timbers and first futtocks were saved, so there is still a bunch of original framing in the vessel. This is really not a replica!